OLGU SUNUMU / CASE REPORT

Multilobuled high basilar artery aneurysm causing hydrocephalus

Yüksek yerleşimli multilobüle baziller arter anevrizmasına bağlı hidrosefali

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Abstract
This report describes an obstructive hydrocephalus caused by the mass effect of a basilar artery aneurysm which is a rare condition. A giant multilobed aneurysm that developed in the high basilar tip causing hydrocephalus was treated successfully through clipping and lamina terminalis fenestration. The method of treating hydrocephalus caused by aneurysm is controversial. Ventriculoperitoneal shunt and endoscopic third ventriculostomy are among treatment options. Microsurgical clipping and lamina terminalis fenestration of a high basilar tip aneurysm causing hydrocephalus is a safe and effective method for treating both aneurysm and hydrocephalus in appropriate patients.

Key words: basilar artery aneurysm, hydrocephalus, microsurgery.

INTRODUCTION
Basilar artery aneurysm is not very common, 5-8% of all intracranial aneurysms are located by the basilar artery bifurcation. The symptoms and findings of a basilar artery aneurysm depend on the occlusion of the parent artery and perforators, rupturing of aneurysm or mass effect. The obstructive hydrocephalus caused by the mass effect of a basilar artery aneurysm is a rare condition.

The choice for treating this hydrocephalus caused by aneurysm is controversial. The ventriculoperitoneal (VP) shunt procedure may lead to bleeding in or widening of aneurysm. Although the endoscopic third ventriculostomy is the ideal treatment option, it has the disadvantage of technical difficulty in the presence of the hydrocephalus with basilar tip aneurysms. We explain in this report how a giant multilobed ruptured aneurysm that developed in the high-location basilar tip causing hydrocephalus was treated successfully through clipping and lamina terminalis fenestration.

CASE
A female patient aged 73 who complained headache and sudden blackout was hospitalized after being diagnosed with Fisher grade 4 subarachnoid hemorrhage (SAH) and acute hydrocephalus on the computed tomography (CT). The patient who was Glasgow Coma Scale (GCS) grade was 12 (E2, V5, M 5) and Hunt & Hess grade 3 was stabilized hemodynamically in the intensive care unit and was...
administered a CT angiography. A high located (Fig. 1a, b) and mutilobed (Fig. 2a, b) aneurysm was found during the CT angiography, which caused an obstructive hydrocephalus by growing toward the inside of 3rd ventricle. After a left frontotemporal orbitozygomatic craniotomy, the high-location basilar tip aneurysm was clipped and a lamina terminalis fenestration was administered. The patient, whose clinical condition and radiological hydrocephalus improved (Fig. 3) in the post-operative period, was discharged on the 10th day without any need for an additional surgical procedure (VP shunt, Endoscopic third ventriculostomy(ETV)).

**DISCUSSION**

The hydrocephalus complication that develops after an aneurysm-related subarachnoid hemorrhage (SAH) is very well known. Occurrence of an acute hydrocephalus and intraventricular hemorrhage after a rupture is more common in posterior circulation aneurysms than in anterior circulation aneurysms. We think that the mass effect on the 3rd ventricle caused by the hemorrhagic giant aneurysm that occurred at the high basilar tip and the SAH both contributed to the development of a hydrocephalus in our patient. Perioperative lamina terminalis fenestration, endoscopic third ventriculostomy and VP shunt procedure are the treatment options for this complication. Endovascular intervention is a widely used method as an alternative to surgery in the treatment of posterior circulation aneurysms. However, clipping of aneurysms through the microsurgical method should be preferred.
particularly in giant aneurysms that have a mass effect. Treating high-location basilar tip aneurysms with endovascular intervention remains ineffective in the presence of hydrocephalus complications. Due to hydrocephalus, a second surgical process such as ETV or VP shunt procedure is required.

Sato et al. reported that they successfully treated a basilar tip aneurysm involving a hydrocephalus using ETV after a coil embolization. However, on a magnetic resonance image they also showed that the same patient had an edema-related intensity in the brainstem and thalamus region due to a mass effect after the embolization of the giant aneurysm. It has been reported that there is a technical difficulty and rebleeding in an ETV procedure because the aneurysm blocks the floor of the third ventricle and the VP shunt has the risk of rebleeding or widening of the aneurysm dome.

Clipping the aneurysm in our patient through the microsurgical method enabled removal of the mass effect and the flow of the cerebrospinal fluid. Additionally, the hydrocephalus was treated by enabling drainage using the lamina terminalis fenestration. Microsurgical clipping and lamina terminalis fenestration of a high-location basilar tip aneurysm causing hydrocephalus is a safer and effective method for treating both aneurysm and hydrocephalus in appropriate patients.

REFERENCES